SIEMENS

FLUOROSPOT H/HK

AX

Installation Instructions

Non-SIEMENS Laser Camera
Digitally Connected
Valid for FL-H/HK

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Required Documents

- Service Manual FLUOROSPOT H 89999-0031

Required Test Equipment and Devices

- Service PC according specifications in the ARTD part 1 3.1.0
- SST 320 terminal emulation, 97 04 586 Y4364

General Remarks

The startup of the camera is performed by the technical service of the respective camera manufacturer.

Survey when an OCL is necessary

Camera	Distance between FL-H and HCC	FL-H / HK and HCC at the same power distribution	**OCL necessary**
3M XL(959) 3M HQ(969)	————	————	**NO**
AGFA MCL / MIN / MG 3000 with MFRI Board Rev. A-D	< = 30m < = 30 m > 30 m > 30 m	YES NO YES NO	**NO** **YES** **YES** **YES**
AGFA MCL / MIN / MG 3000 with MFRI Board Rev. E and >	< = 60m < = 60 m > 60 m > 60 m	YES NO YES NO	**NO** **NO** **YES** **YES**
All other cameras, Multiple Modality	< = 60m < = 60 m > 60 m > 60 m	n.a. n.a n.a n.a	**YES** **YES** **YES** **YES**
All other cameras, Single Modality	< = 60m < = 60 m > 60 m > 60 m	YES NO YES NO	**NO** **YES** **YES** **YES**

Parts of optical camera link (OCL) for laser cameras

Kit for the optical camera link, Part No:11 76 671 X2176

Includes:

Transmitter (Host Module)	No:	46 83 629 B4001
Date cable to FL-H	No:	46 84 270 B5620
Control cable to FL-H	No:	46 83 561 B1940
Mains cable	No:	11 69 197 X2115
Receiver (Camera Module)	No:	46 83 637 B4002
Data cable to laser camera	No:	46 83 579 B1940
Control cable to laser camera	No:	46 83 561 B1940
Power cable (3 m)	No:	46 83 595 B1948
Order separately:	:	
Duplex optical fiber (30 m)	No:	46 89 469 B4003 or
Duplex optical fiber (100 m	No:	46 90 756 B4003

Survey of OCL connection (Block Diagram)

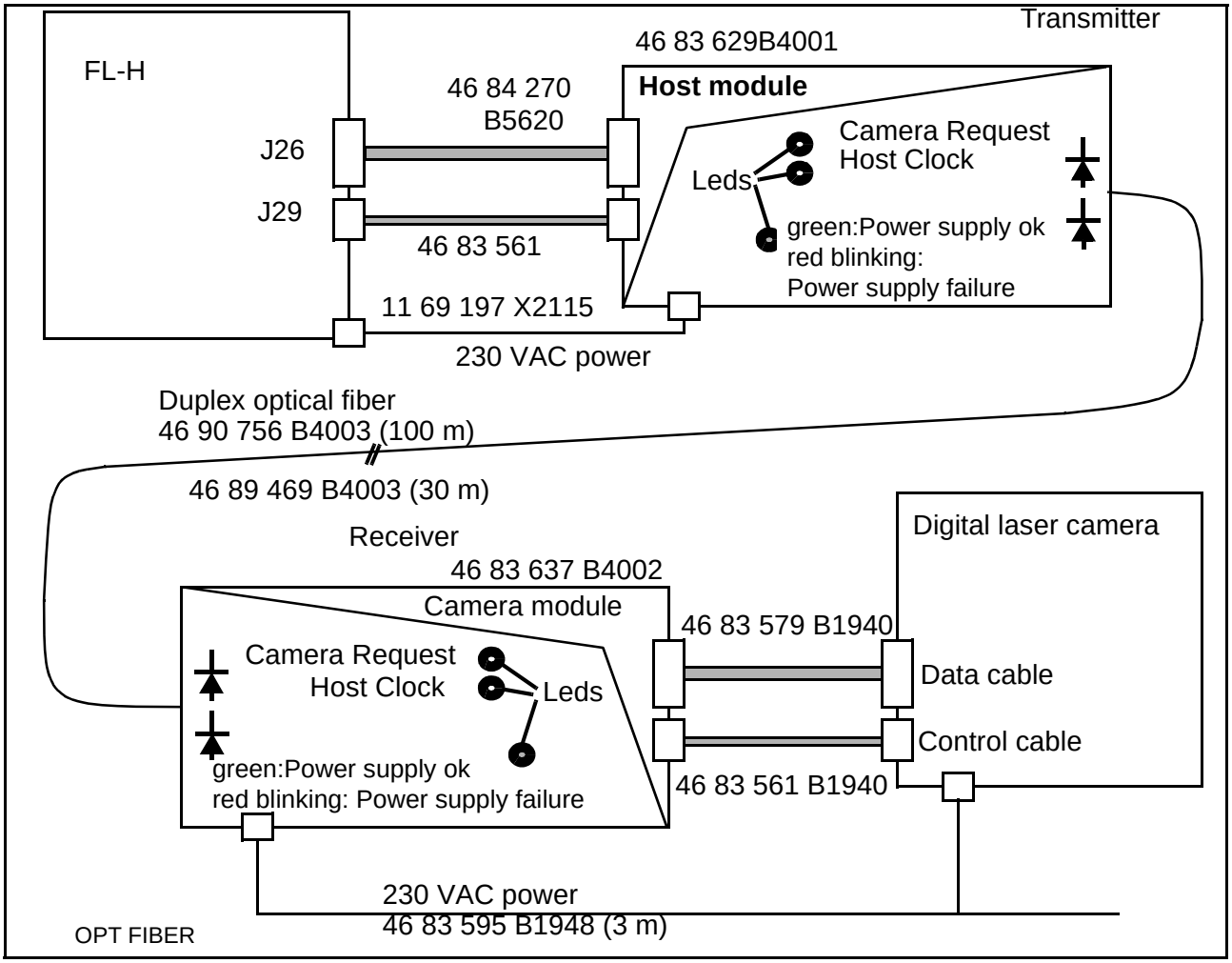

Fig. 1

Units without OCL

Cable set, 26 m	26 m	No:	44 90 421 RH041
Includes:			
Data cable	26 m	No:	11 63 307 X1755
Fiber optic cable (FOC)	30 m	No:	77 60 598 B4003
2 Opto modules for 30 m FOC)	2 x	No:	77 60 606 B4002
Cable set, 60m	60 m	No:	44 90 439 RH041
Includes:			
Data cable	60 m	No:	16 00 100 X1755
Fiber optic cable (FOC)	60 m	No:	46 95 821 B 4003
2 Opto modules for 60 m FOC	2 x	No:	46 71 228 B4002
Adapter cable for 60 m FOC		No:	11 76 978 X2115

NOTICE

Note: When opto module for 60 m FOC is used, there is a danger of kinking the FOC. To avoid kinking, use an adapter cable between J 29 (FLUOROSPOT) and the opto module.

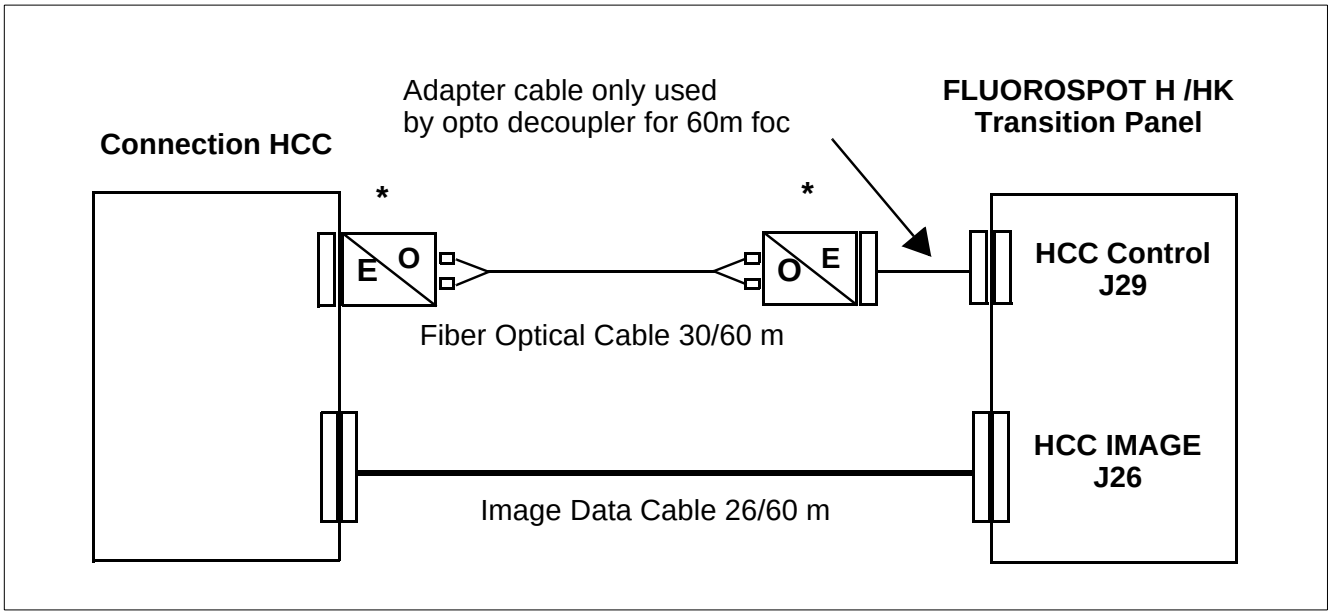

Fig. 2

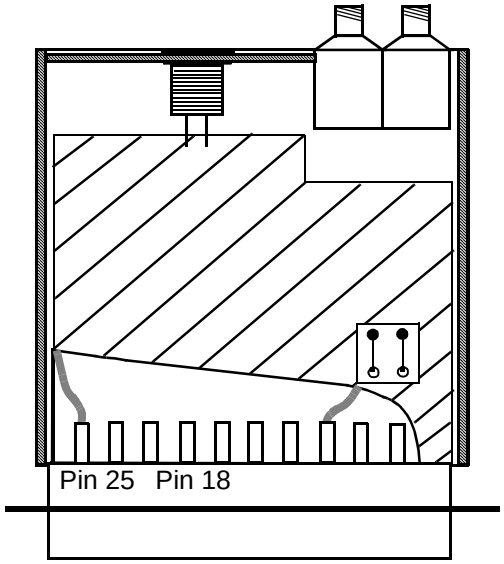

Fig. 3

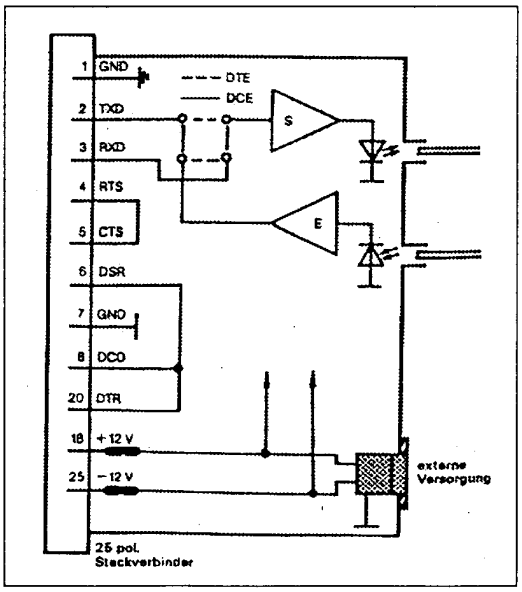

Fig. 4

Check of the OZDV 241/246* Opto Modules (Hirschmann)

- Open both Opto Modules and check whether the jumpers for TxD and RxD are in the correct position (see Fig. 1).
- Check whether the solder connections for the internal voltage supply (ñ12 V) have been made (see Fig. 2) and close the Opto Modules.

Safety note

Observe the safety notes in Reg. 2 of the FLUOROSPOT H service manual.

FLUOROSPOT H/HK System Configuration

(see also Service Manual FLUOROSPOT H VC21 / VD10 or VC22 / VD11 Chapter 3 ”Software Configuration”).

HCC type	DIGICAM/LINXNET2; 3M 959/969-SHPT-2;AGFA-MCL-3; AGFA-MCL-4;KODAK-XLP-4; KODAK-2180/1120-2;KONICA-LI10A-2; FUJI-3543-P2Further camera driver see 2-26	e. g. DIGICAM /LINXNET 2
Default HCC multiple format	1:1; 2:1; 4:1; 6:1; 8:1; 9:1; 12:1; 15:1; 16:1; 20:1; and mixed formats *	e.g. 4:1
Default HCC multiple film size	14 x 17; 11 x 14; 8 x 10; 14 x 14 *	e.g. 14 x 17
Default HCC single format	same selection as multiple format possible	e.g. 2 + 8:1

Default HCC single film size	same selection as multiple size possible	e.g. 11 x 14
HCC interpolation mode (multiple)		SMOOTH
HCC interpolation mode (single)		SMOOTH
HCC film density (optical density x100)		300
HCC LUTs		1
HCC black level	used for analog cameras only	0
HCC white to black level (mV)	used for analog cameras only	700

*depending on camera used

Configuration of format default settings

It is possible to configure one of the camera supported formats as default in both menu points HCC multiple format and HCC single format.

Hardcopy Camera	**HCC Firmware (minimum version)**	**FL-H Camera Driver**
3M PLUS (M952) via HCI	Version 2.3 Version 3.2 (HCI Special LUT firmware: 321A	3M 952-HCI-2
3M XL (M959) via HCI,	Version 2.0 Version 3.2 (HCI) Special LUT firmware:322AO	3M 959/969-HCI-2
3M HQ (M969) via SHPTV1.2		3M 959/969-SHPT-2
AGFA MCL MIN Mixed formats	SMCL 01416 SUM 02017 AGFA Camera patch required	AGFA-MCL-3 AGFA-MCL-4
AGFA MG 3000 + LR 3300	MeGa1P10 OEMMG 010	AGFA-MCL-3 / AGFA-MCL-4

Hardcopy Camera	HCC Firmware (minimum version)	FL-H Camera Driver
KODAK XLP	CPDI 2.2	KODAK-XLP-3
KODAK 1120	CPDI 2.2	KODAK-XLP-3
KODAK XLP	CPDI 2.3	KODAK-XLP-4
KODAK 1120	CPDI 2.3	KODAK 2180/1120-2
	CPDI > 2.3 (planned for future)	KODAK 2180/1120-3
KODAK 2180	CPDI 2.3	KODAK 2180/1120-2
	CPDI > 2.3 (planned for future)	KODAK 2180/1120-3
DIGICAM Du Pont LINXNET, LP400 with LINXNET only	Version 22 Rev. 2.0	DIGICAM/LINXNET2
KONICA LI10A	Version 2.0 FLH Protocol	KONICA-LI10-A-2
FUJI FL-IM 3543 (portrait) 884 x 884 Matrix 1024 x 1024 Matrix	 14Y5749001D05, AE01PR 003 14Y5749001D05, AE01PR 002	FUJI-3543-P2
FUJI FL-IM 3543 (land-scape) 884 x 884 Matrix 1024 x 1024 Matrix	 14Y5749001D05, AE01PR 003 14Y5749001D05, AE01PR 002	FUJI-3543-L2
Other cameras		Generic Digital 2

3M PLUS (M952 with HCI)

Example with OCL

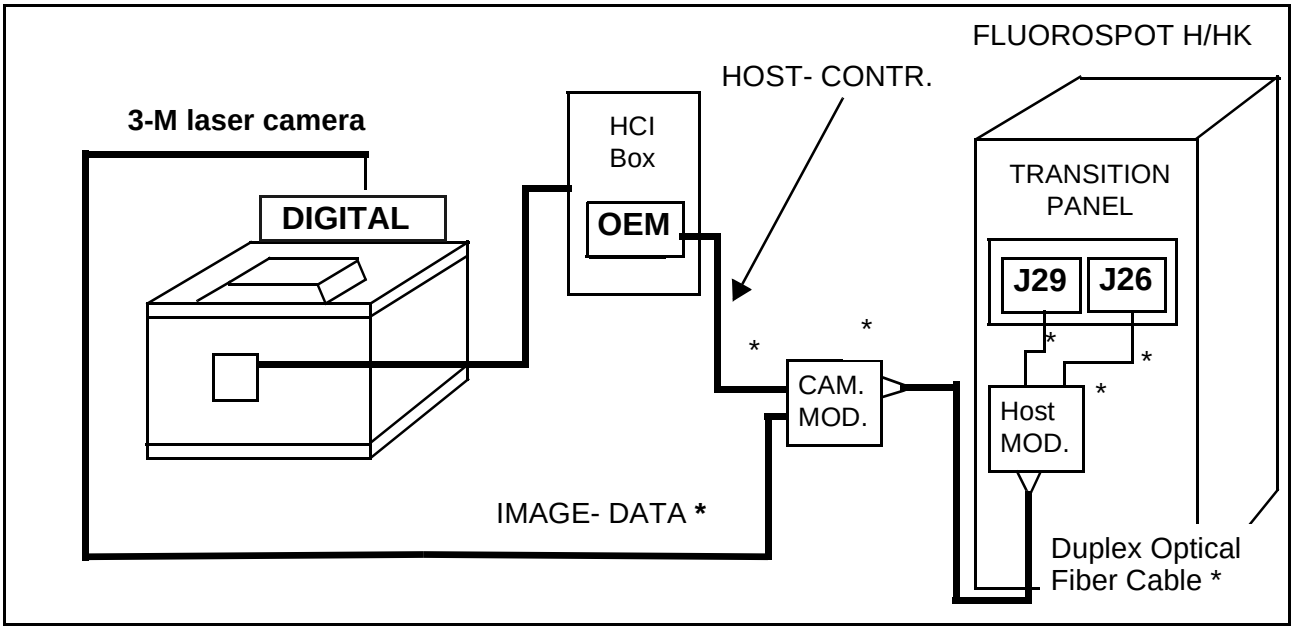

Fig. 1

*Parts of the Optical Camera Link

Hardware requirements

- HCC digital board or VIDEO OUT III board in the FLUOROSPOT is necessary
- Whether an OCL is necessary see page 1-1

Configuration

In the FLUOROSPOT SYSTEM CONFIGURATION (see page 1-4), set the menu point ”HCC type” to ”3M 952-HCI-2”.

Supported formats see page 2-20

The selectable formats are also depending from the memory-expansion of the 3M-PLUS camera

FLUOROSPOT H/HK TRANSITION PANEL..

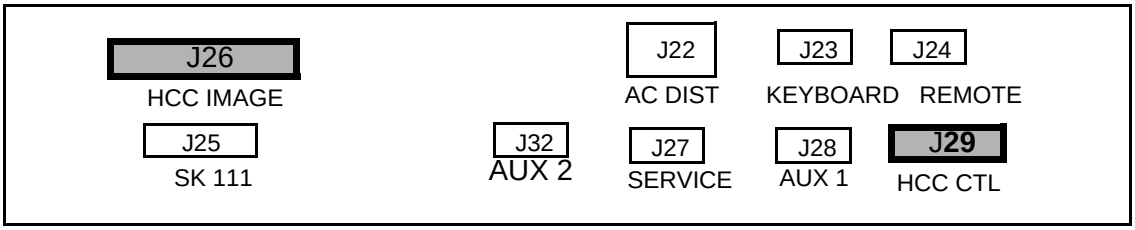

Fig. 2

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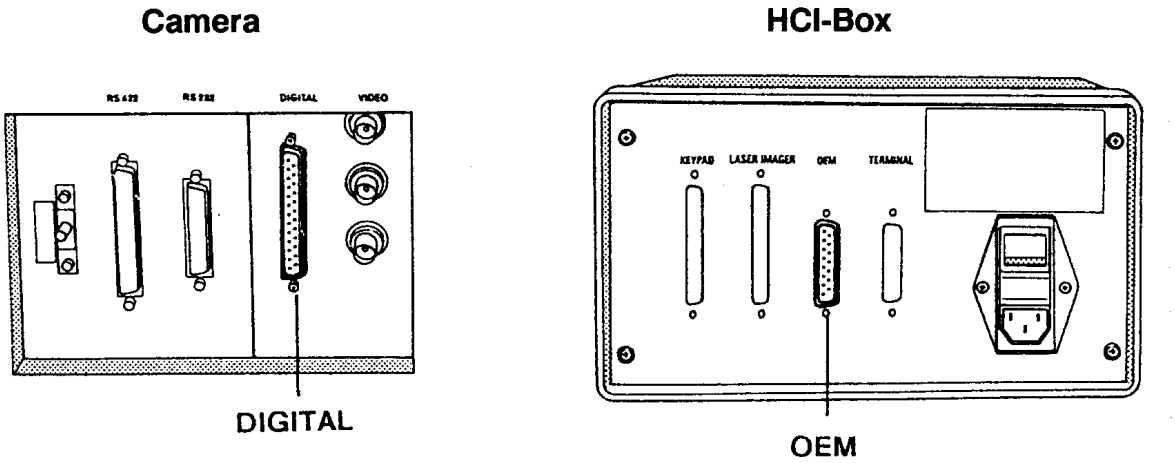

Fig. 3

Jumper Setting HCI-BOX

The DIP switch on the CPU-Board (HCI-Box) has to be set to the proper position DIP switch on HCI-CPU Board

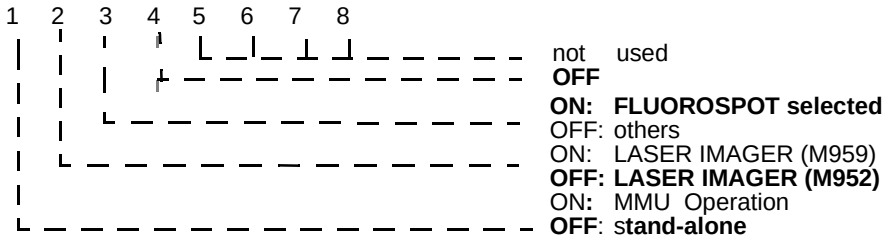

Fig. 4

If the CPU is correctly set, the HCI must display ”SET UP FOR FLUOROSPOT H” for some seconds after power up.

Other notes

If contrast curve 12 is selected in the 3M-PLUS camera, the monitor image impression largely coincides with the film.

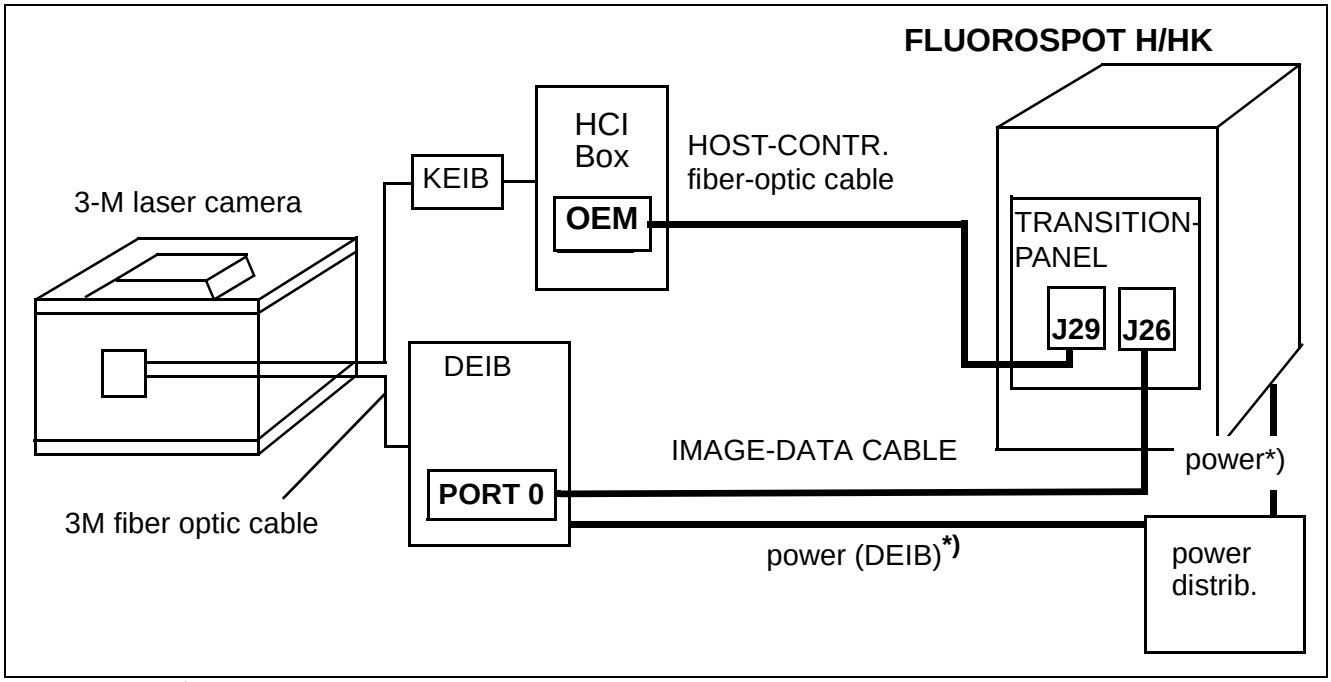

Fig. 5

*) connect to the same power distribution panel

KEIB = KEYPAD-EXTERNAL-INTERFACE-BOX
HCI = HOST-CONTROL-INTERFACE
DEIB = DATA-EXTERNAL-INTERFACE-BOX

Hardware requirements

- HCC digital board or VIDEO OUT III Board in the FLUOROSPOT is necessary
- OCL (Optical Camera Link) is not necessary.
- Cable sets 30/60m: see page 1-2

3M (M959 XL with HCI)

Configuration

In the FLUOROSPOT H SYSTEM CONFIGURATION (see page 1-4), set the menu point ”HCC type” to ”3M-959/969-HCI-2”.

Supported formats see page 2-20

The selectable formats are also depending from the memory-expansion of the 3M camera.

FLUOROSPOT H/HK TRANSITION PANEL.

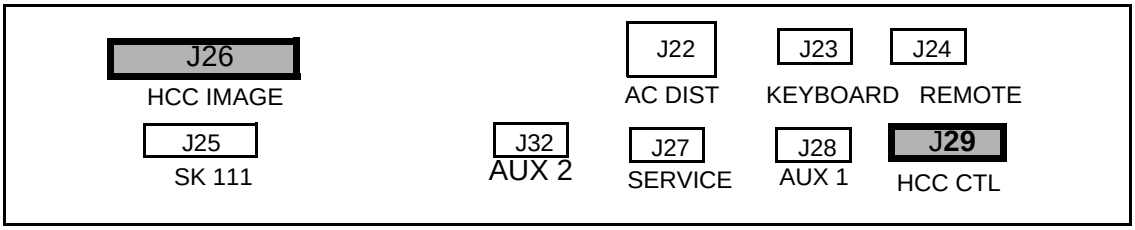

Fig. 6

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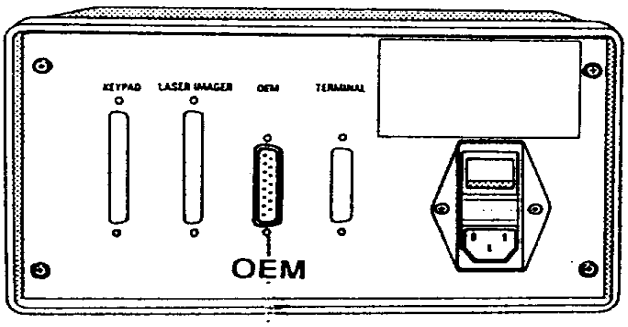


Fig. 7

Jumper Setting HCI-BOX

The DIP switch on the CPU-Board (HCI-Box) has to be set to the proper position

DIP switch on HCI-CPU Board

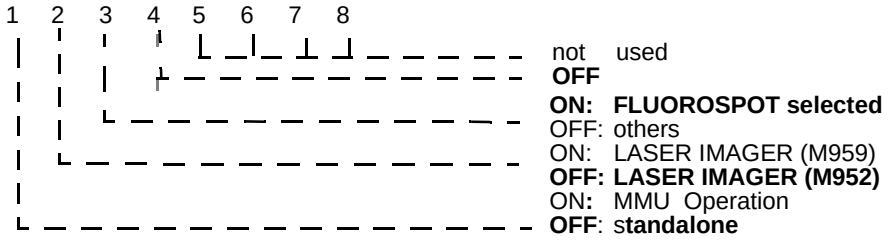


Fig. 8

If the CPU is correctly set , the HCI must display ”SET UP FOR FLUOROSPOT H” for some seconds after power up

..

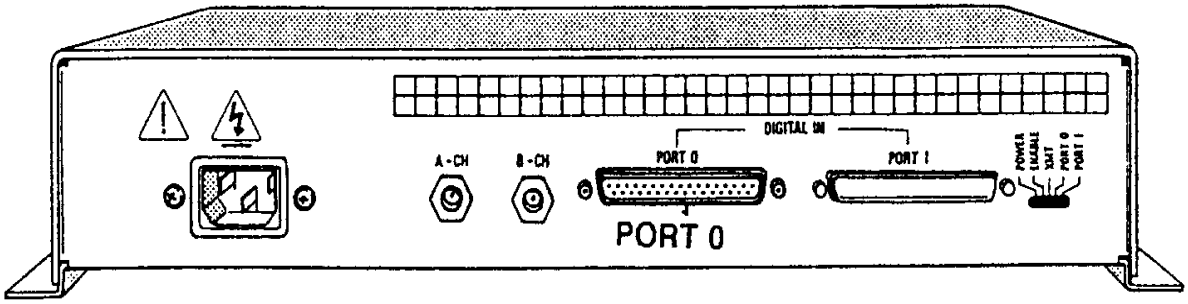
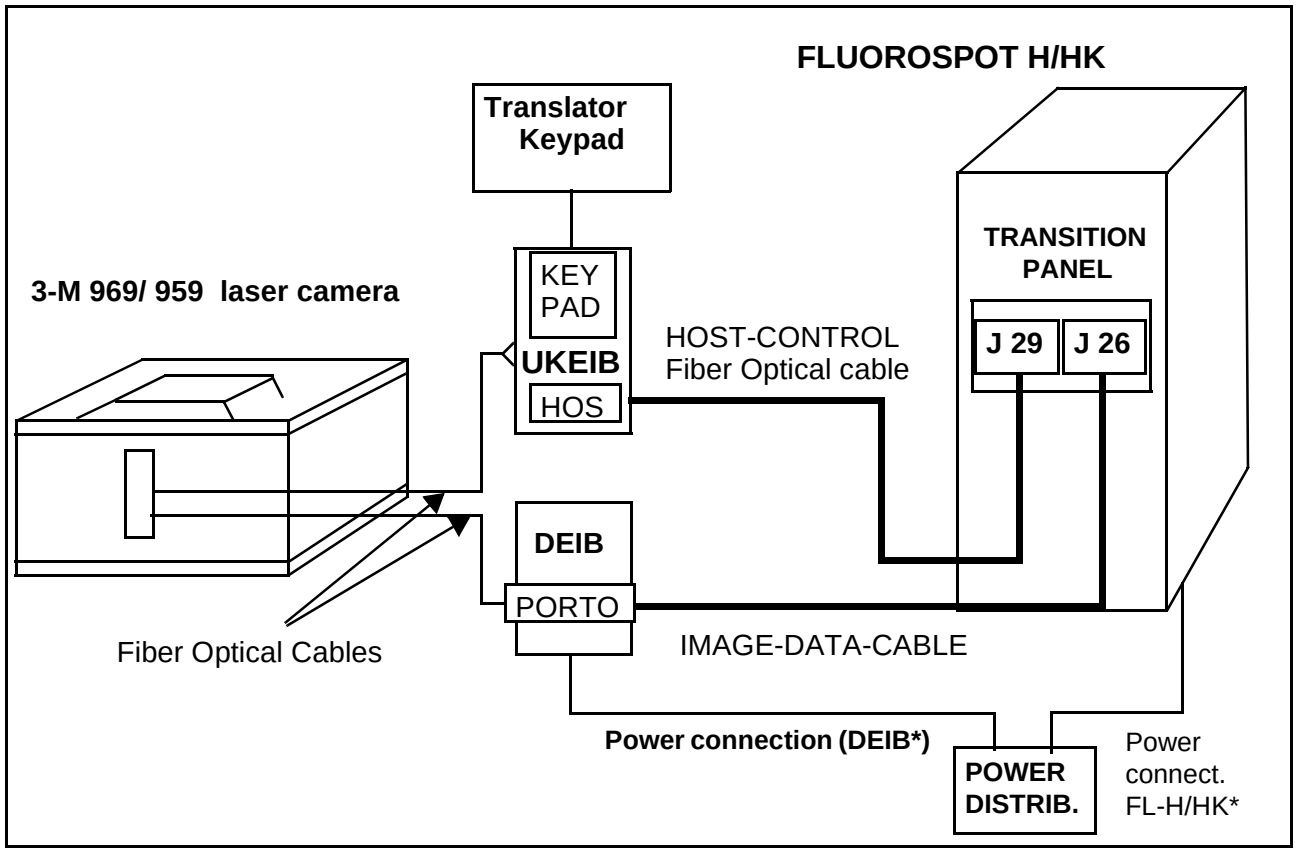


Fig. 9

Other notes

If contrast curve 9 is selected in the 3M-XL camera, the monitor image impression largely coincides with the film

3M HQ (M969 with SHPT).



*Connected to the same power distribution

UKEIB = Universal Keypad External Interface Box
DEIB = Data External Interface Box

Hardware requirements

- HCC digital board or VIDEO OUT III board in the FLUOROSPOT is necessary
- OCL (Optical Camera Link) is not necessary
- Cable sets 30/60m: see page 1-2

NOTICE **For the connection of the fiber optical control cable use the opto decouplers (OZDV) on the TRANSITION Panel and on the UKEIB.**

Configuration

In the FLUOROSPOT SYSTEM CONFIGURATION (see page 1-4), set the menu point ”HCC Type” for the 3M 969”3M 959/969-SHPT-2”.

Supported formats see page 2-26

The selectable formats are also depending from the memory-expansion of3M HQ (3M969)

If contrast curve 9 is selected in the 3M XL (3M 959) camera, the monitor image impression rather coincides with the film.

FLUOROSPOT H/HK TRANSITION PANEL

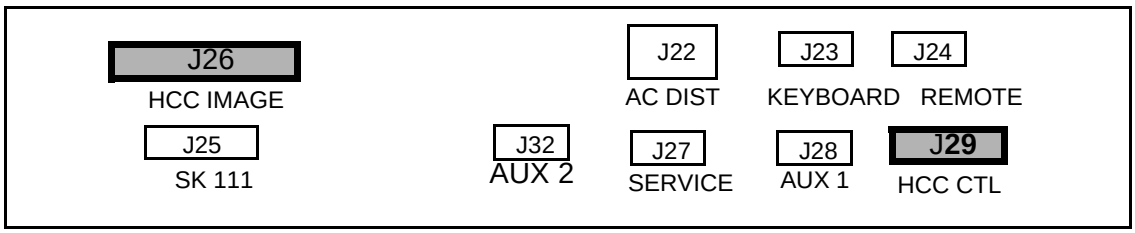


Fig. 10

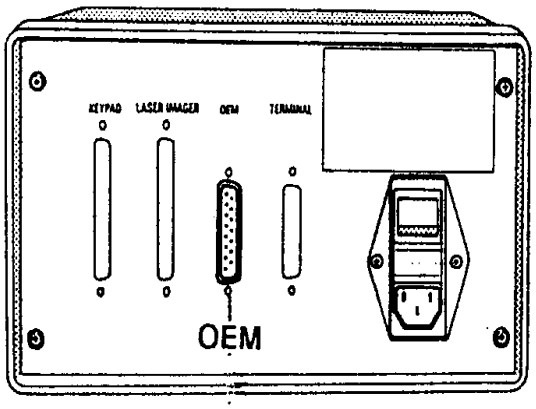


Fig. 11

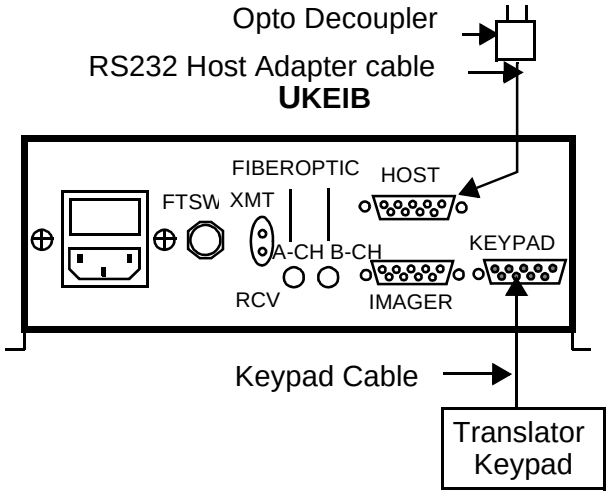
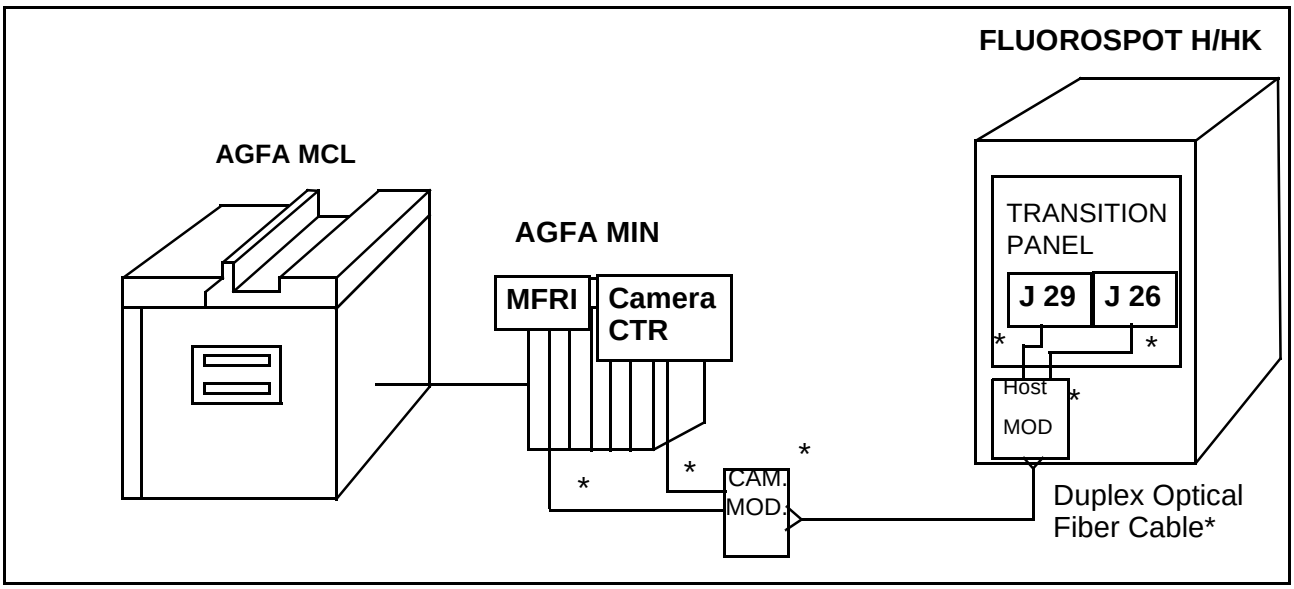


Fig. 12

AGFA MCL with AGFA-MIN

.Example with OCL



*Parts of the Optical Camera Link

Hardware requirements

- HCC digital board or VIDEO OUT III board in the FLUOROSPOT is necessary
- Whether an OCL is necessary see page 1-1

Configuration

For FLUOROSPOT SYSTEM CONFIGURATION (see page 1-4).
For mixed formats ask AGFA Service for camera patch. With patch, load hardcopy driver ”AGFA-MCL-4”. Respectively without patch load driver ”AGFA-MCL-3”.

To test the function of the patch start a mixed format hardcopy

Supported formats see page 2-20

FLUOROSPOT H/HK TRANSITION PANEL

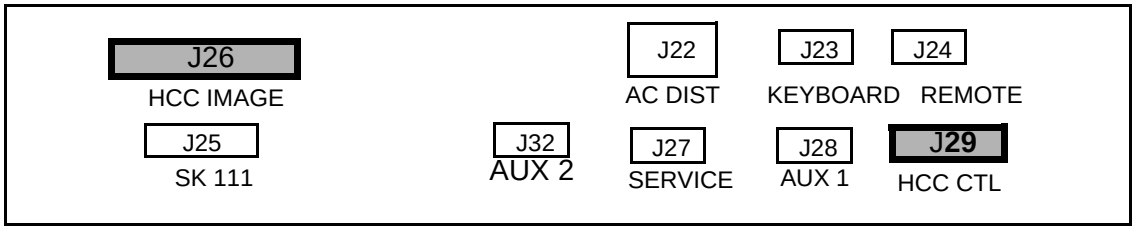


Fig. 13

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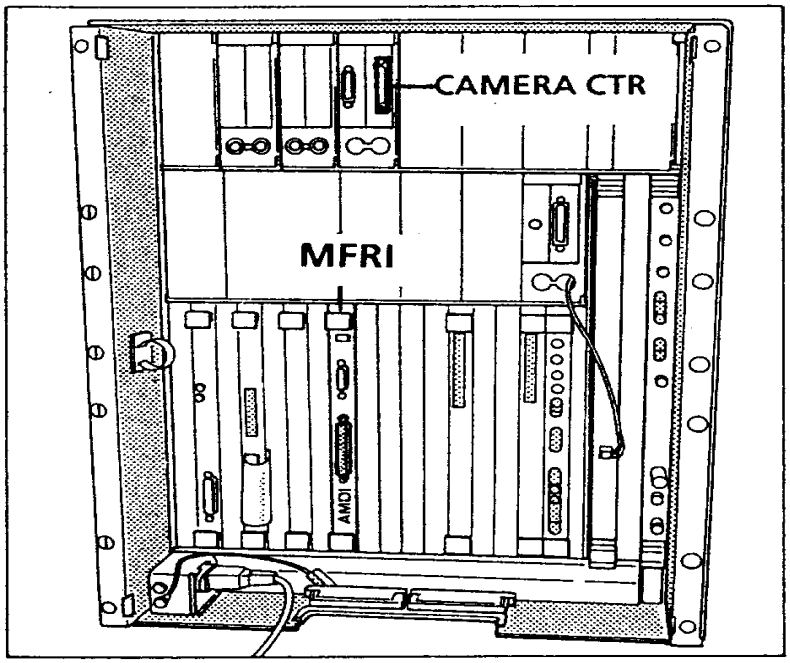


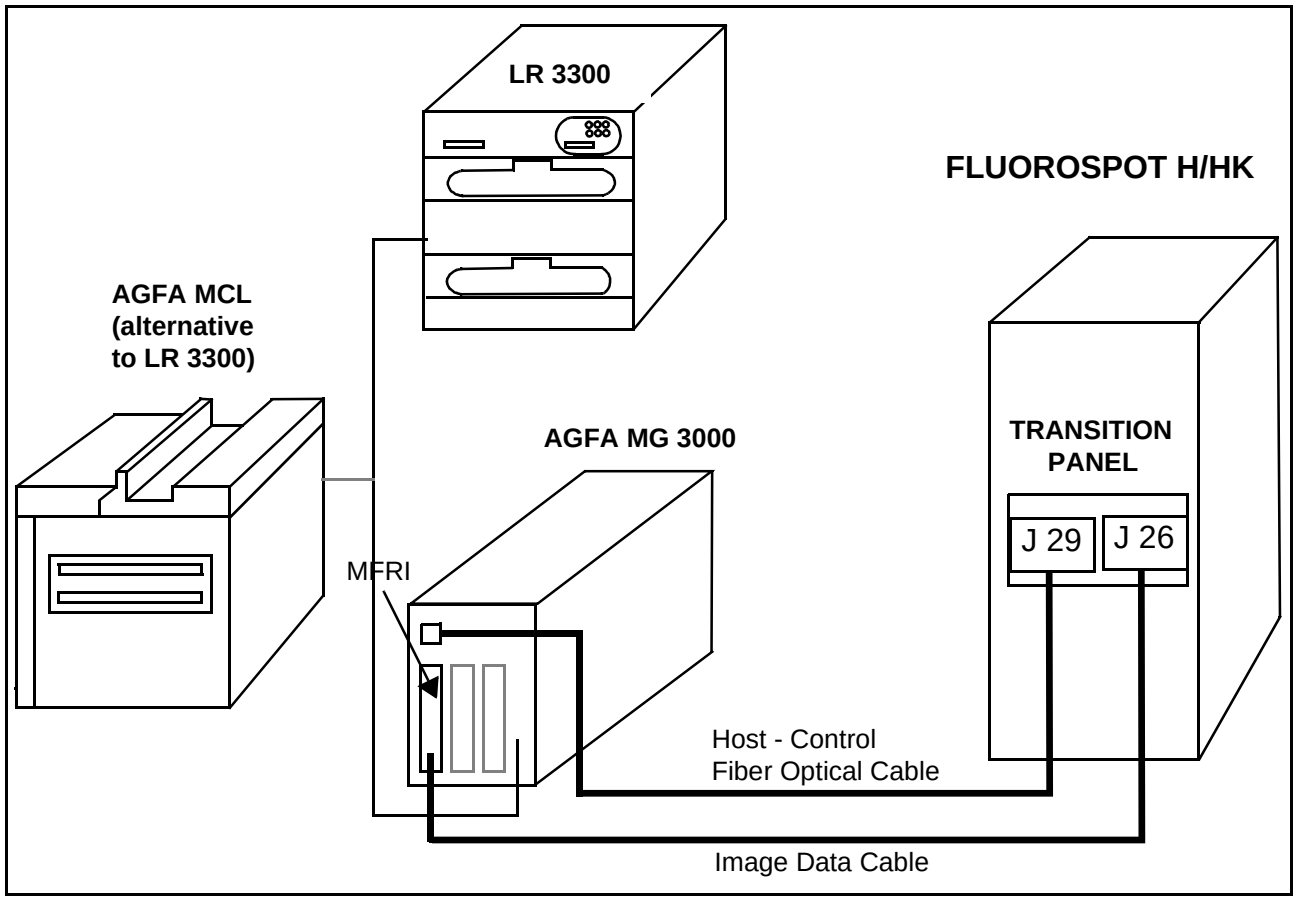
Other notes

If the ”KANAMORI” curve is selected in the AGFA MCL camera, the monitor image impression largely coincides with the film.

The AGFA MCL with AGFA MIN is expandable to support up to four image systems.

It is necessary to set the”Autoeject” flag to? Active Auto print function” at the AGFA Camera (performed by the AGFA technical service).

AGFA MG 3000 + LR 3300.



MFRI= Multi Format Receiving Interface

Hardware requirements

- HCC DIGITAL BOARD or VIDEO OUT III board in the FLUOROSPOT is necessary
- Whether an OCL is necessary see page 1-1

Configuration

In the FLUOROSPOT SYSTEM CONFIGURATION (see page 1-4) set the menu point ”HCC type” to ”AGFA-MCL-4 or AGFA-MCL-3”.

Supported formats see page 2-20

If the FLUOROSPOT H/HK dedicated LUT (OEM 101 LUT) in the MG 3000 is configured the monitor image impression rather coincides with the film.

FLUOROSPOT H/HK TRANSITION PANEL

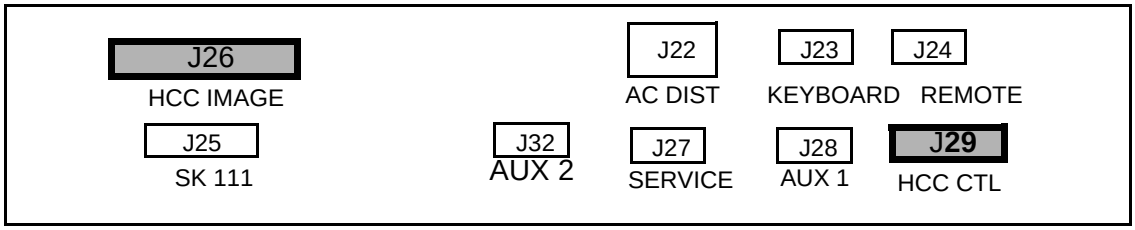


Fig. 14

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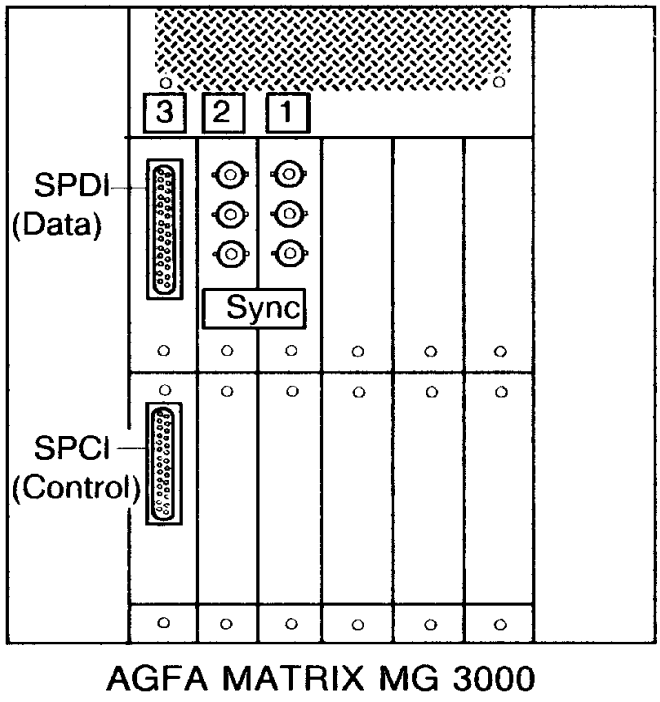
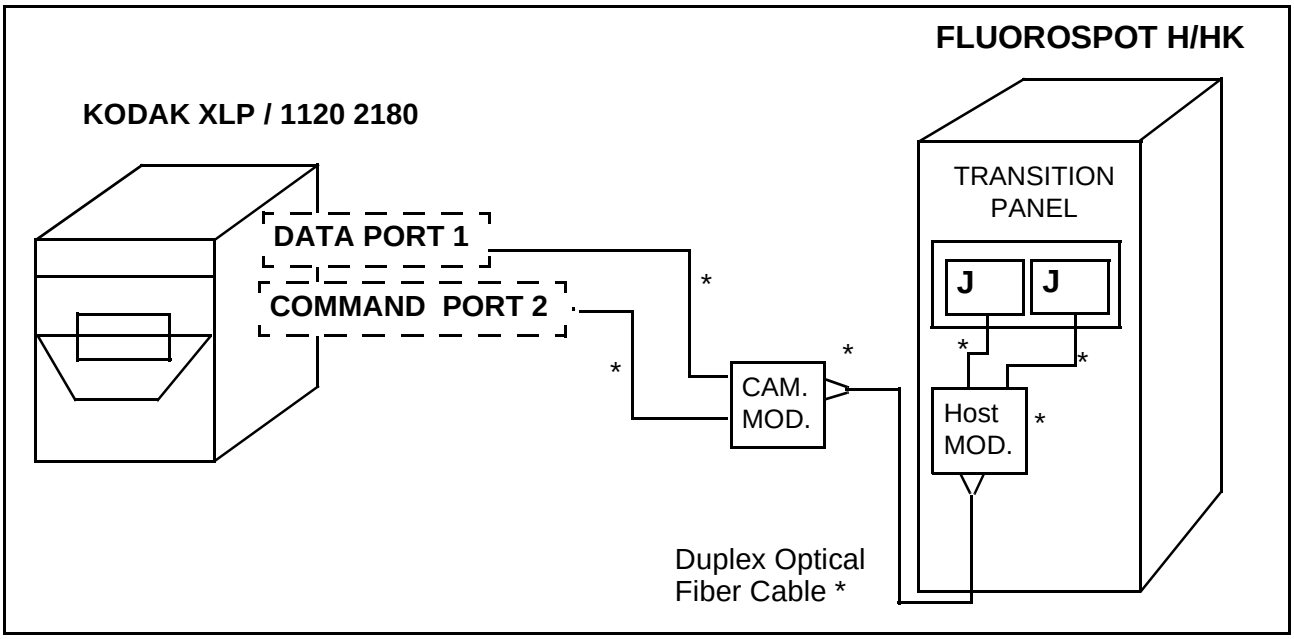


AGFA MATRIX MG 3000

KODAK XLP / 1120 / 2180

Example with OCL.



*Parts of the Optical Camera Link

Hardware requirements

- HCC digital board or VIDEO OUT III board in the FLUOROSPOT is necessary
- Whether an OCL is necessary see page 1-1

Configuration

In the FLUOROSPOT SYSTEM CONFIGURATION (see page 1-4) select a KODAK hard-copy driver depending on the firmware of the KODAK hardcopy camera. (see page 1-5)

Supported formats see page 2-21

The selectable formats are also depending from the memory-expansion of KODAK camera.

FLUOROSPOT H/HK TRANSITION PANEL

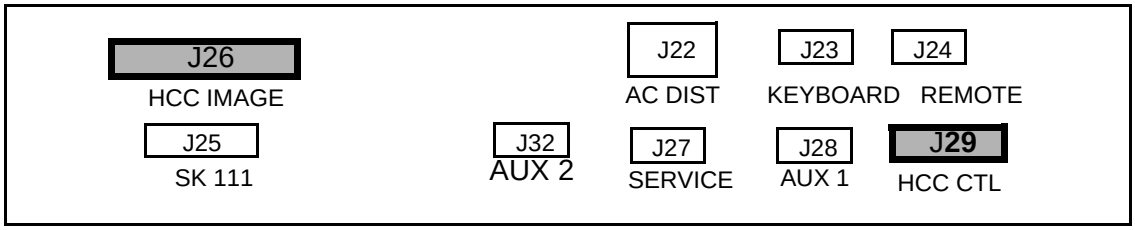


Fig. 15

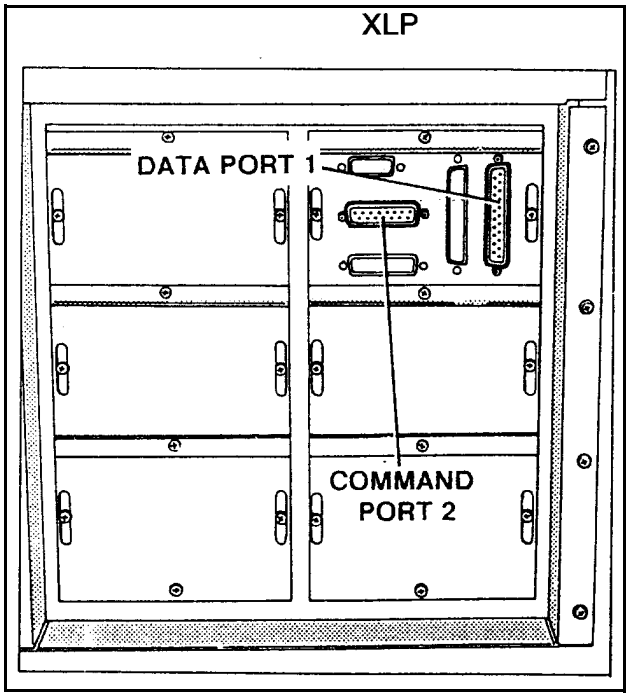


Fig. 16

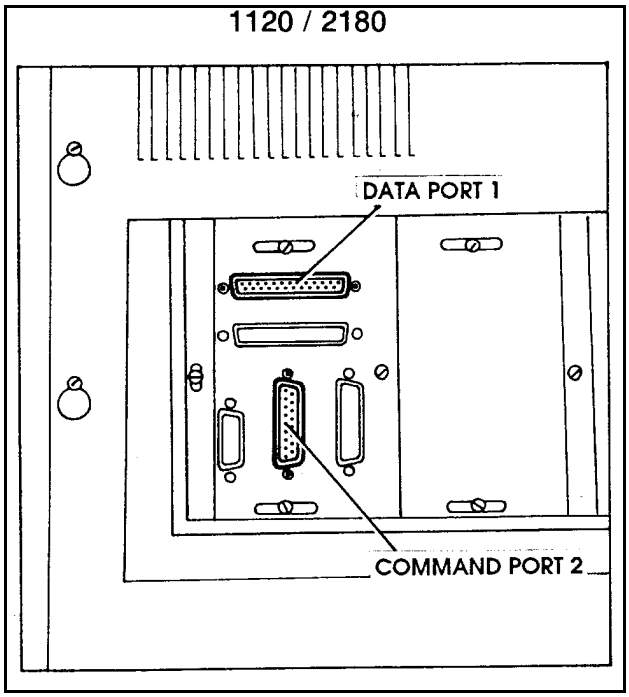


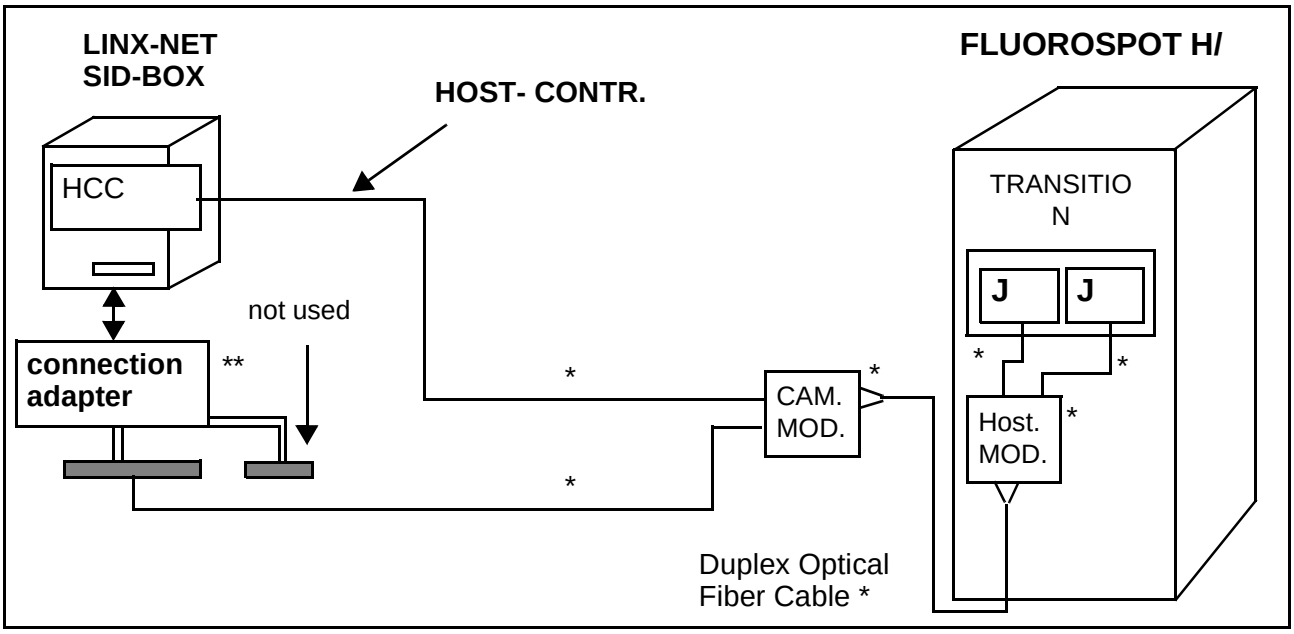
Fig. 17

NOTICE

If "CURVE SHAPE 4" is selected in the KODAK XLP or 1120 or 2180 camera, the monitor image impression largely coincides with the film.

DU PONT LINX-NET

Example with OCL.



*Parts of the Optical Camera Link
**Parts of the LINX-Net

Hardware requirements

- HCC digital board or VIDEO OUT III board in the FLUOROSPOT is necessary
- Whether an OCL is necessary see page 1-1

Configuration

In the FLUOROSPOT SYSTEM CONFIGURATION (see page 1-4), set the menu point ”HCC type” to ”DIGICAM / LINX NET 2”.

Supported formats see page 2-21

The selectable formats are also depending from the memory-expansion of DIGICAM / DU PONT cameras.

FLUOROSPOT H/HK TRANSITION PANEL

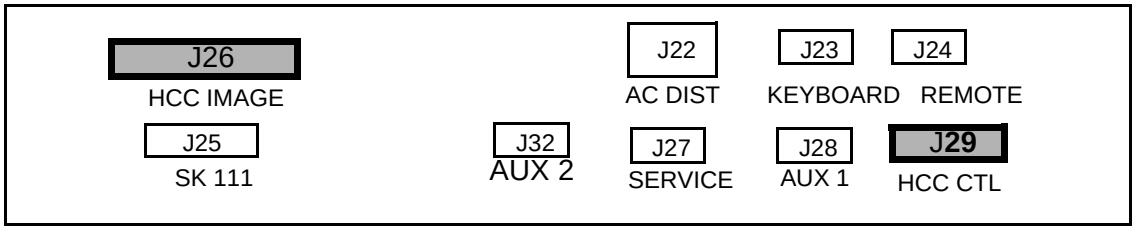
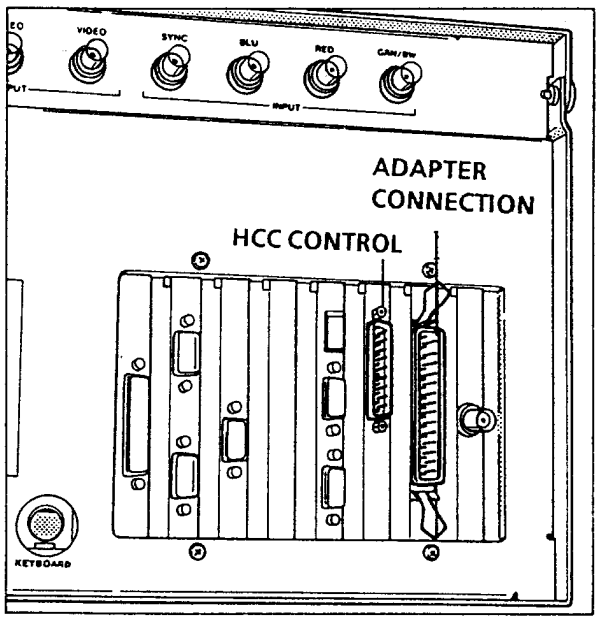


Fig. 18

.



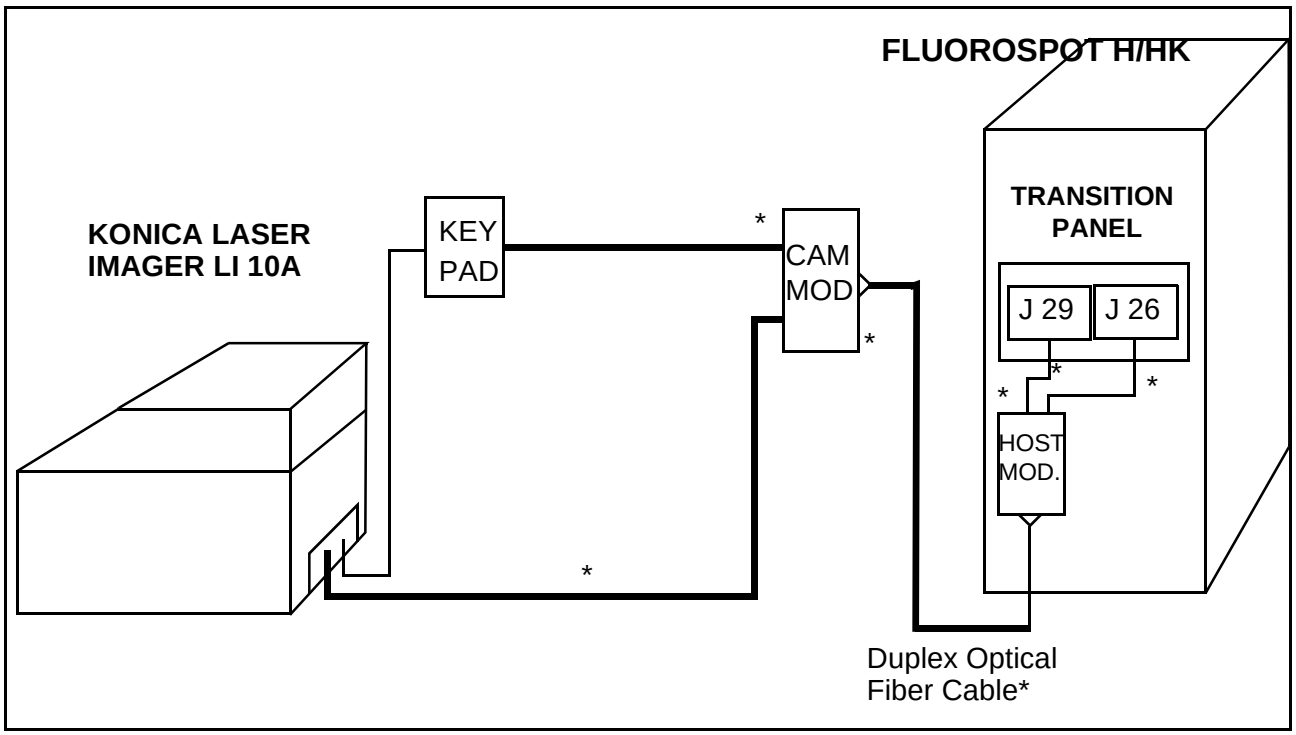
Other notes

The DU PONT laser camera and DIGICAM are identical in design.

KONICA LI10A

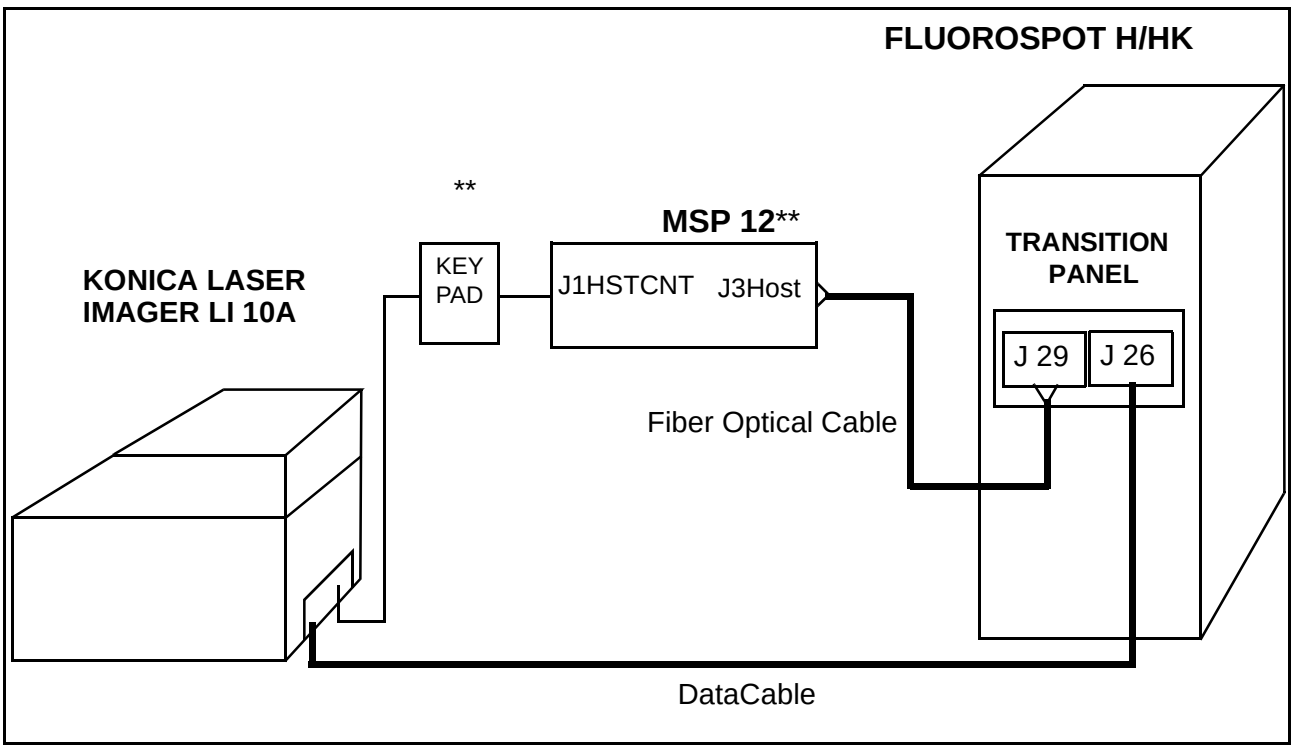
KONICA LI10A

Example with OCL



* Parts of the Optical Camera Link (OCL)

Example without OCL



** Parts of Konica installation kit

FLUOROSPOT H/HK TRANSITION PANELL

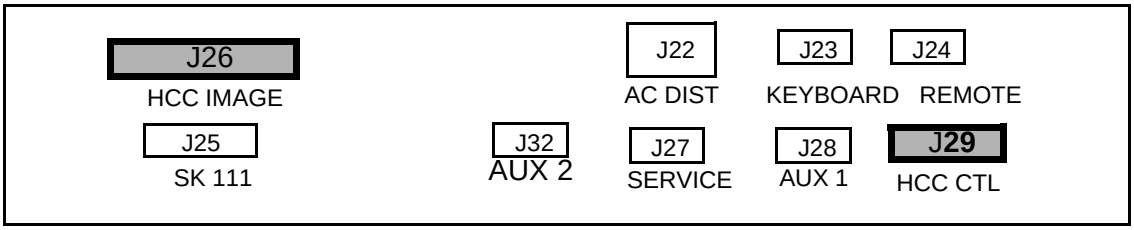
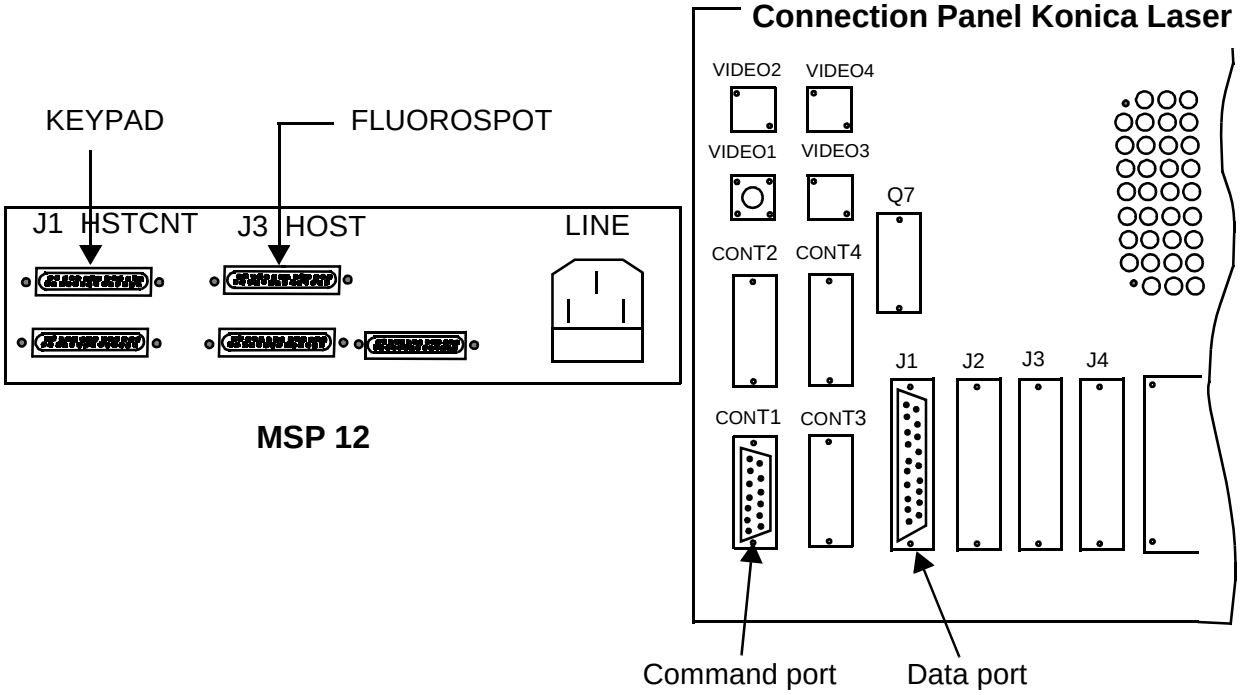


Fig. 19



Hardware requirements

- HCC digital board or VIDEO OUT III board in the FLUOROSPOT is necessary
- Whether an OCL is necessary see page 1-1

Configuration

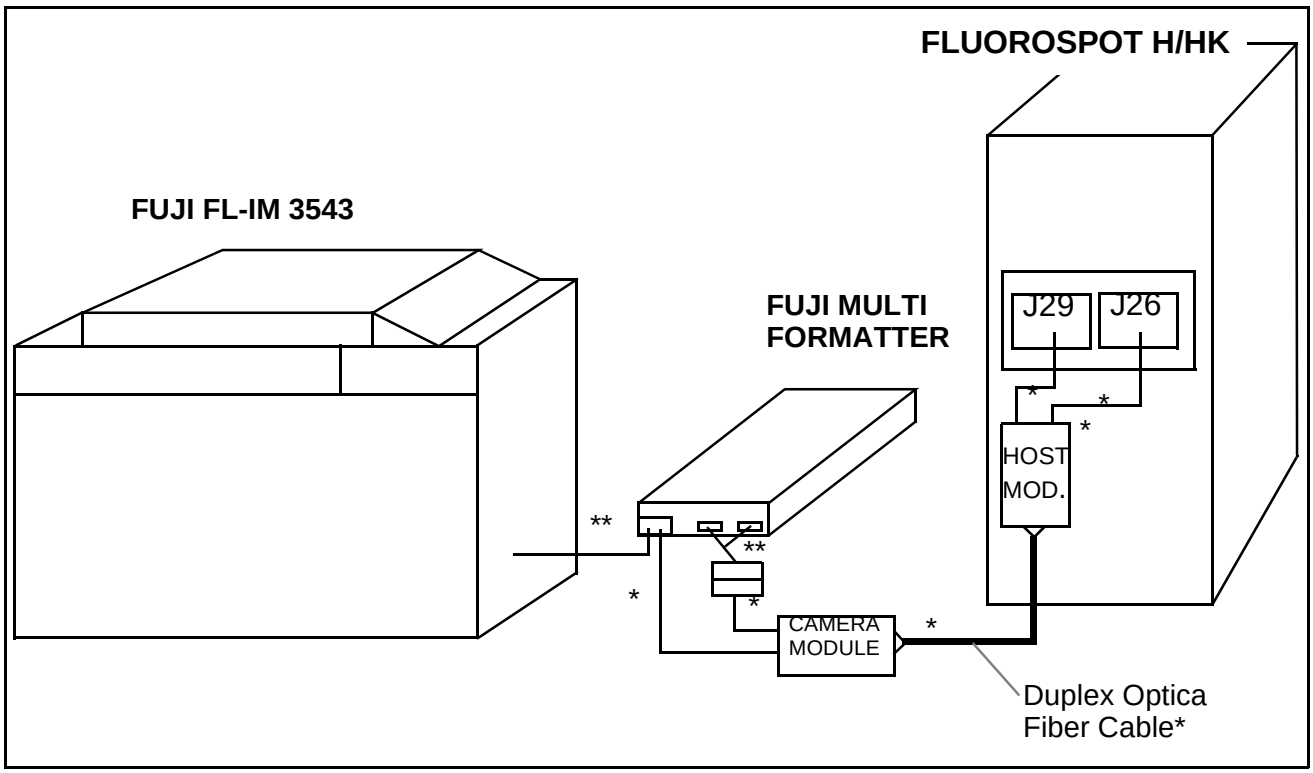
In the FLUOROSPOT SYSTEM CONFIGURATION (see page 1-4), set the menu point ”HCC type” to ”KONICA-LI10A-2””.

Supported formats see page 2-22

The configuration of the LI 10A includes a special FL-H LUT.
With this LUT the monitor image impression rather coincides with the film.

FUJI FL-IM 3543

Example with OCL.



*Parts of the Optical Camera Link (OCL)
**Part of the Fuji Multi Formatter

Hardware requirements

- HCC DIGITAL BOARD or VIDEO OUT III board in the FLUOROSPOT is necessary
- Whether an OCL is necessary see page 1-1

Configuration

In the FLUOROSPOT SYSTEM CONFIGURATION (see page 1-4), set the menu point ”HCC type” to ”FUJI-3543-P2” for portrait or ”FUJI-3543-L2” for landscape.

Supported formats see page 2-21

The configuration of the Fuji FL-IM 3543 includes a special FL-H LUT.
With this LUT the monitor image impression rather coincides with the film.

FLUOROSPOT H/HK TRANSITION PANELL

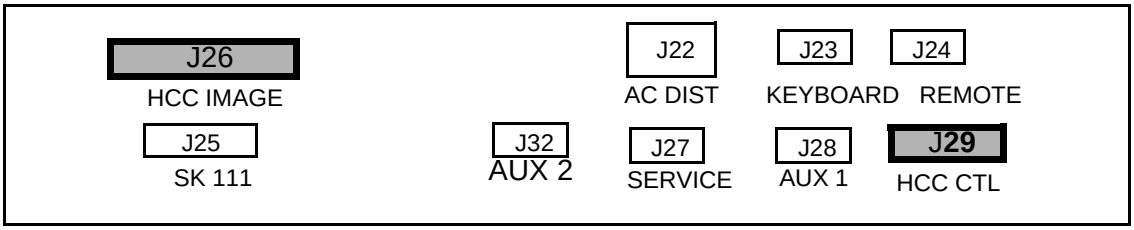
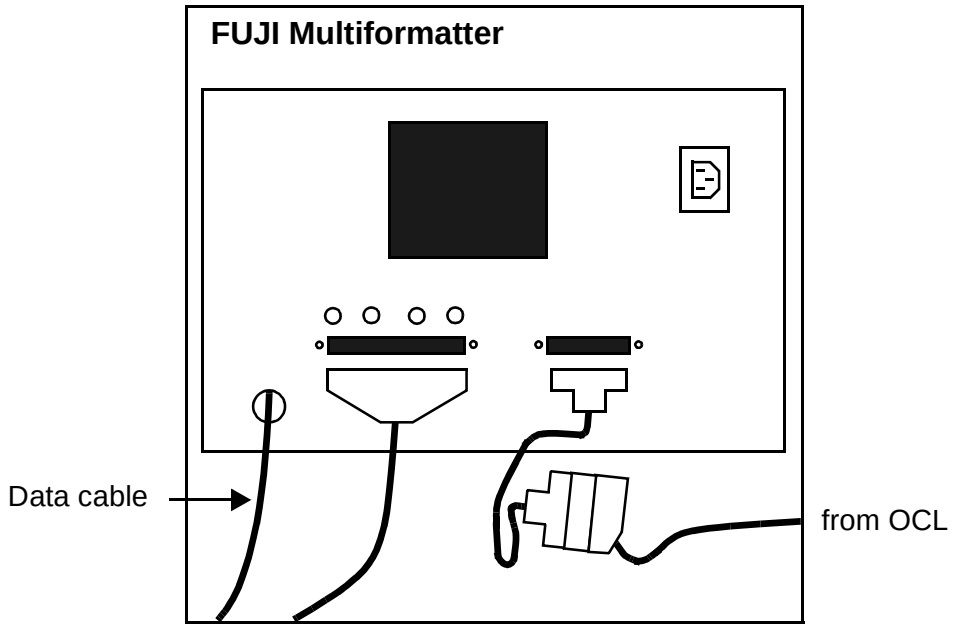


Fig. 20



Camera driver and supported formats

Sizes and Formats for FLUOROSPOT H formats (images/filmsheet)

driver name	camera	size	1	2	4	6	8	9	12	15	16	20	mixed formats						
"3M952-HCI-2"	3M952 (Plus)	14x17	1	2	4	6	-	-	12	-	-	-							
		14x17c	2	4	8	12	-	-	24	-	-	-							
3M959/969-HCI-2	3M959 (XL)	14x17	1	2	4	6	-	-	12	15	-	20							
	3M969 (HQ)	14x17c	2	4	8	12	-	-	24	-	-	-							
3M959/969-SHPT-2	3M959 (XL)	14x17	1	2	4	6	-	9	12	15	16	20	2 + 6	6 + 2	2 + 12	12 + 2	20s		
	3M969 (HQ)	14x17c	2	4	8	12	-	18	24	-	-	-	4 + 12	12 + 4	-	-	40s		
AGFA-MCL-3	MCL(solo, MIN,	14x17	1	2	4	6	-	9	12	-	16	20							
	+ Spoler)	14x17c	2	4	8	12	-	18	24	-	-	-							
	MG3000+LR3300																		
AGFA-MCL-4	MCL(solo, MIN,	14x17	1	2	4	6	-	9	12	-	16	20	2 + 8	8 + 2	3 + 4	4 + 2			
	+ Spoler)	14x17c	2	4	8	12	-	18	24	-	-	-	4 + 16	16 + 4	6 + 8	8 + 4			
	MG3000+LR3300	14x11	1	2	4	6	-	9	12	15	-	20	3 + 2	2 + 4					
		14x11c	2	4	8	12	-	18	24	-	-	-	6 + 4	4 + 8					
		8x10	1	2	4	6	-	9	-	-	16	20	4 + 4						
		8x10c	2	4	8	12	-	18	-	-	-	-	8 + 8	-					
KODAC-XLP-3	Kodak XLP,	14x17	1	2	4	6	-	9	12	15	16	20							
	Kodak 1120	14x17c	2	4	8	12	-	18	24	-	-	-							
	(CPDI 2.2)																		
KODAK-XLP-4	KODAK-XLP	14x17	1	2	4	6	8	9	12	15	16	20							
	(CPDI 2.3)	14x17c	2	4	8	12	16	18	24	-	-	-							
		11x14	1	2	4	6	8	9	12	-	-	-							
		11x14	2	4	8	12	16	18	24	-	-	-							
		14x14	1	2	4	6	8	9	12	-	16	-							
		14x14c	2	4	4	12	16	18	24	-	-	-							

			formats (images/filmsheet)																
KODAK-2180/1120-2	KODAK 2180.	14x17	1	2	8	6	8	9	12	15	16	20							
	KODAK 1120	14x17c	2	4	8	12	16	18	24	-	-	-							
	(CPDI 2.3)	11x14	1	2	4	6	8	9	12	-	-	-							
		11x14c	2	4	8	12	16	16	24	-	-	-							
		8x10	1	2	4	6	-	-	-	-	-	-							
		8x10c	2	4	8	12	-	-	-	-	-	-							
		14x14	1	2	4	6	8	9	12	-	16	-							
		14x14c	2	4	8	12	16	18	24	-	-	-							
DIGICAM/LINXNET 2	DIGICAM	14x17	1	2	4	6	8	9	12	15	16	20	1 + 8	2 + 12	6 + 1	9 + 2	12 + 2		
	LINXNET	14x17c	2	4	8	12	16	18	24	-	-	-	2 + 16	-	12 + 2	18 + 4			
	LP400																		
FUJI-3543-P2	Fuji FL-IM3543	14x17	1	2	4	6	-	-	12	15	-	20	1 + 2	1 + 6	6 + 12	9 + 8			
		14x17c	2	4	8	12	-	-	24	-	-	-	2 + 4	2 + 12	-				
FUJI-3543-L2	Fuji FL-IM3543	14x17	1	2	4	9	-	-	-	-	16	-	2 + 3	3 + 2	2 + 8	8 + 2			
		14x17c	2	4	8	18	-	-	-	-	-	-	4 + 6	6 + 4	4 + 16	16 + 4			
KonikaLI10A-2	Konika LI10A	14x17	1	2	4	6	8	9	12	15	16	20	2 + 3	3 + 2	2 + 6	6 + 2	2 + 9	9 + 2	12s
		14x17c	2	4	8	12	16	18	-	-	-	-	4 + 6	6 + 4	4 + 12	12 + 4	-	-	24s
		11x14	1	2	4	6	8	9	12	15	16	20	2 + 3	3 + 2	2 + 6	6 + 2	2 + 4	4 + 2	-
		11x14c	2	4	8	12	16	18	-	-	-	-	4 + 6	6 + 4	4 + 12	4 + 12	4 + 8	8 + 4	-
		14x14	1	2	4	6	-	9	12	15	16	20	-	-	-	-	-	-	12s
		14x14c	2	4	8	12	-	18	-	-	-	-	-	-	-	-	-	-	24s

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Hardcopy Driver Modification

The following problem can be avoided by applying the 3rd disk of the VD12 Software:

Some types of Laser Cameras will lock, when the modality selects a film size, which is not available in the camera. The customer can make a mistake when selecting a film size at the Fluorospot, which is not supported by the camera.

The following procedure is also described in the file **readme.bat** on the 3rd disk:

1. Put DISK 3 of the FLH Installation floppy set into your Service PC.
2. Select drive a:.
3. Run the executable file CUSTOM.EXE...
4. Select the original HCC driver. Look at the table below!
5. Answer the questions about the supported film size(s) with yes and the unsupported film size(s) with no [n].
6. If you gave a wrong answer, run CUSTOM.EXE once more.
7. Then boot the FLUOROSPOT with your Service PC (ST320) connected.
8. At the Service PC, enter the password to get to the MAIN Menu. Proceed to the S/W Installation Menu, then to the RESTORE Menu.
9. Remove the floppy from the Service PC and place it in the FLH floppy drive.
10. Use the RESTORE HCC CONFIGURATION FILES function to copy the new HCC driver to the FLH. Go back to the S/W Installation Menu, and select SYSTEM CONFIGURATION.
11. From the SYSTEM CONFIGURATION Menu, select CHANGE CONFIGURATION.
12. Choose the HCC driver "CUSTOM" in the FLUOROSPOT configuration menu.
13. Save the new configuration.
14. Switch the FLUOROSPOT off and on again for the new driver to take effect.

Tab. 1 Correlation between HCC driver in FLH configuration<>name.def on disk 3

HCC Config Name	Disk 3 Driver Name
3M952-HCI-2	3M952B.DEF
3M959/969-HCI-2	3M959B.DEF
3M952-SHPT2	952SHPTB.DEF
3M959/969-SHPT2	959SHPTB.DEF
AGFA-MCL-3	AGFMCL1B.DEF
AGFA-MCL-4	AGFMCL2B.DEF
DIGICAM/LINXNET	DIGILNXB.DEF
FUJI-3543-L2	FU3543LB.DEF

FUJI-3543-P2	FU3543PB.DEF
KODAK-XLP-3	KODXLP1B.DEF
KODAK-XLP-4	KODXLP2B.DEF
KODAK2180/1120-2	KOD2180B.DEF
KODAK2180/1120-3	KOD2180C.DEF
KONICA-LI10A-2	KOLI10AA.DEF
GENERIC-DIGITAL-2	GENERICB.DEF
ANALOG CAMERAS	
AGFA-CR2050-1	AGF2050.DEF
Analog-2	ANALOGB.DEF
MI-11-2	MI11B.DEF

Service Tools for Tracing the SPCI/SPDI Interface

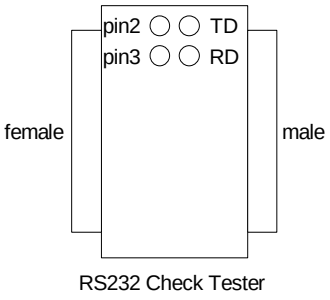
There are two tools for troubleshooting the Command and DATA transmission to and from the camera.

The first tool is a cheap tool to check the drivers of the Optical Camera Link (OCL) modules, the fiber optic cables, and the hardware signals on the DATA and CONTROL path.

The tool is called **Linktest** and can be ordered as a **spare part** with the part number **46 92 177.** It consists of two main parts:

1. Tester for the Control Interface

RS 232 Check Tester

Note: (only pin 2 

RS232 Check Tester
and pin 3 are used)

8-pin modular socket:
1 NC
2 NC
3 NC
4 GND
5 NC
6 RXD
7 TXD
8 +5V

TXD and RXD are monitored via Leds

The Control Interface of the Fluorospot can be tested with the help of the **Loop Back Connector**, which is part of the CTX accessories. The **Loop Back** makes a connection

between pin 2 and 3, so that one can test the control interface of the FLH by starting the **Loop Back Test** in the service menu **Interface Tests**.

The **Check Tester** can be used to display the RXD and TXD signals.

The **Loop Back Connector** can be plugged into transition panel of the FLH or into the SPCI output of the OCL on camera side. The loop back can **not** be used to check the **Hirschmann** modules, because they need the power supply from the camera.

2. Linktest Board

The link test board consists of three independent functional units:

a) 13 LED pairs to display the status of the 13 RS485 lines of the parallel camera interface SPDI:

DATA0 to DATA7, PAR, CLOCK, MODSEL and DAREQ, REP.

This display functions even without power supply via the OCL fibre optic link.

b) 2 LED pairs to monitor the RS232 lines of the SPCI interface:

RXD and TXD.

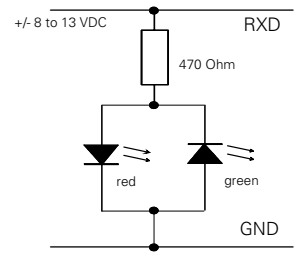
Functions only if used with the OCL fibre optic link.

c) Test signal generator: In connection with a short-circuit cable, it actively tests the function of the OCL fibre optic link FOC path in both directions (flashing red and green SPCI TEST LED); for this purpose, press the TEST-ON key. No host and camera connection is necessary for the test.

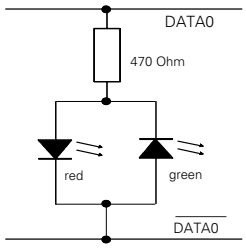
For functional testing of the SPDI drivers, press the DAREQ-ON key (functions only if used with the OCL fibre optic link). The link test board is fully transparent for the data of the SPCI and SPDI interface if neither the TEST-ON key nor the DAREQ-ON key has been pressed! Therefore, it may remain inserted in the cable during normal operation of the camera interface.

LED circuits:

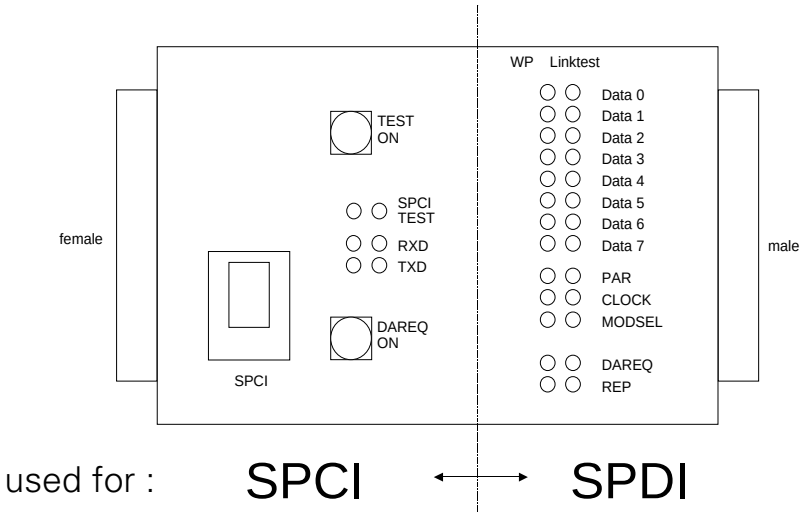
SPCI:



SPDI:



LED schematics and pin allocation table:



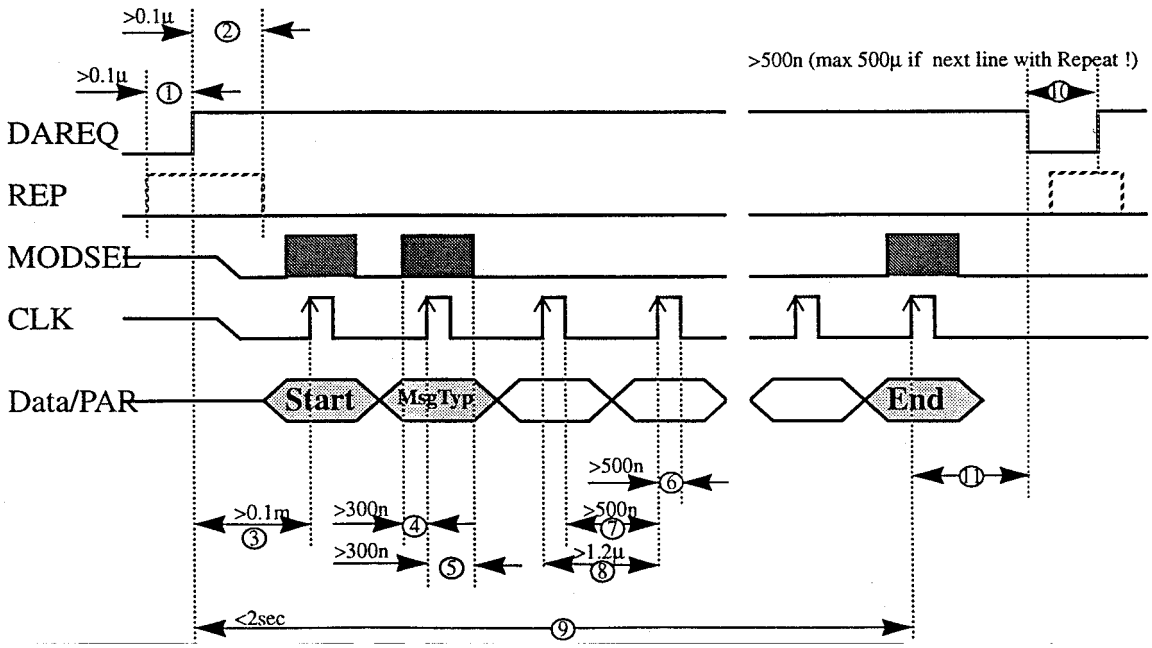
Pin allocation table of the link test board:

Female connector Sub-D		Male connector Sub-D
1	Shield / GND	Shield / GND
2	NC	NC
3	REP	REP
4	DAREQ	DAREQ
5	MODSEL	MODSEL
6	CLOCK	CLOCK
7	PAR	PAR
8	DATA7	DATA7
9	DATA6	DATA6
10	DATA5	DATA5
11	DATA4	DATA4
12	DATA3	DATA3
13	DATA2	DATA2
14	DATA1	DATA1
15	DATA0	DATA0
16	NC	NC
17	NC	NC
18	TXD	NC/TXD as from update level (Äst) 03 of OPSP
19	RXD	NC/RXD as from update level (Äst) 03 of OPSP
20	+5V	GND
21	NC	NC
22	REP*	REP*
23	DAREQ*	DAREQ*
24	MODSEL*	MODSEL*
25	CLOCK*	CLOCK*
26	PAR*	PAR*
27	DATA7*	DATA7*
28	DATA6*	DATA6*

29	DATA5*	DATA5*
30	DATA4*	DATA4*
31	DATA3*	DATA3*
32	DATA2*	DATA2*
33	DATA1*	DATA1*
34	DATA0*	DATA0*
35	NC	NC
36	NC	NC
37	GND	+5V

- Start of image transfer
  The image transfer is initiated by marking images in postprocessing mode and sending them from the FLH memory via the hardcopy interface (HCC or Vid Out3 board) with the button HARDCOPY SINGLE or HARDCOPY MULTI to the laser camera.
- SPCI error
  After the job has been started, the FLH communicates with the laser camera. Film size, format and other parameters are sent to the camera, if the camera is ready. If not, the FLH displays the message '**camera does not seem to be connected**'.
- SPDI error
  When there is no problem in communication via SPCI interface and the camera is ready for data transmission - the camera received the necessary parameters from the FLH-, the FLH waits for the signal DATA REQUEST on the SPDI from the camera. If the camera does not request any data within a certain time (less than 1 minute) or if there is a timing error, the FLH displays the message '**error in data transmission**'. The FLH tries to resend the HCC background job after a certain timeout.
- Image transmission
  The data transfer begins, when the communication via SPCI works and when the parameters for the camera has been transmitted from the FLH. After this handshake, the image is sent via SPDI to the Laser Camera, when the following timing is ok:

SPDI Diagram

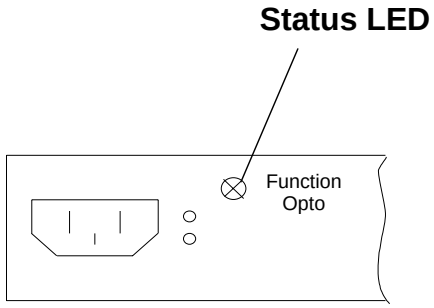


The signals can be measured with 5V level on the Vid Out 3 board as follows:

Camera signal DATA REQUEST	U1200.3
FLH CLOCK	U1211.9
FLH MOD SELECT	U1211.7
FLH PARITY EVEN	U1211.1

Check of the OCL

Status LED green: Hardware is ok
Status LED red blinking:
Cause:
- fibre optic cable may be defective
- the OCL box on the other side may be defective or without mains



Camera Interface Test System

- Purpose
  The CITS (Camera Interface Test System) enables the user to record communications between Laser Cameras and Imaging Systems and to look into the SPCI and SPDI communication.
  It records the transmission of image information and controls information. It monitors the conformity in respect to the interface protocols and detects errors within the syntax of the control commands.
  Digital Laser Cameras are simulated by utilizing their own control commands (Camera Mode).
  Previously recorded information can again be analyzed by means of the “Postanalysis Mode“.

- Elements
  The tool consists of a box with several connectors and some LEDs. Cables are included to connect this box to:
  - Line Voltage, Service PC, SPCI Interface, SPDI Interface

- Application
  The CITS box is controlled by the CAMWIN software, which runs on a Service PC, connected to the control input of the box. The software is a Windows application.

- Result
  The result of listening the SPCI and SPDI interface is stored in a *.ctl file. This file looks like the following.

```
******* CITS USP/SPCI/SPDI-PROTOCOL-ANALYSER VERSION 0.4 *******
                PARAMETERS OF RECORDING:
                CAMERA-TYPE:3M M959 XL
                MODALITY-TYPE:Fluorospot H
                DATE OF RECORDING:05/20/1994
                TIME OF RECORDING:15:47:58
                PARAMETERS OF ANALYSIS:
                MODE:        POST-ANALYSIS OF LISTENER
                RECORDING:ALL
                DATE OF ANALYSIS:05/24/1994
                TIME OF ANALYSIS:10:32:00
************************ START OF ANALYSIS ************************
15:48:11,426    Mod:  2h; STXStart of TeXt
15:48:11,430    Mod: xa1;     Select serial control port 1
15:48:11,444    Mod:  3h; ETXEnd of TeXt
15:48:11,451    Cam: 13h; RNR0Receiver Not Ready 0
15:48:11,456    Cam: 11h; RR0Receiver Ready 0
15:48:11,491    Cam:  2h; STXStart of TeXt
15:48:11,495    Cam: xa1;     Serial control port 1 selected
15:48:11,509    Cam:  3h; ETXEnd of TeXt
15:48:11,515    Mod: 13h; RNR0Receiver Not Ready 0
15:48:11,519    Mod: 11h; RR0Receiver Ready 0
15:48:11,555    Mod:  2h; STXStart of TeXt
15:48:11,559    Mod:  ?\;       Query camera status
15:48:11,569    Mod:  3h; ETXEnd of TeXt
15:48:11,575    Cam: 14h; RNR1Receiver Not Ready 1
15:48:11,580    Cam: 12h; RR1Receiver Ready 1
15:48:11,612    Cam:  2h; STXStart of TeXt
15:48:11,617    Cam: \>51-0010210; Camera status
15:48:11,671    Cam:  3h; ETXEnd of TeXt
15:48:11,676    Mod: 14h; RNR1Receiver Not Ready 1
15:48:11,681    Mod: 12h; RR1Receiver Ready 1
15:48:11,695    Mod:  2h; STXStart of TeXt
15:48:11,700    Mod:  ?/;       Query exposure status
15:48:11,708    Mod:  3h; ETXEnd of TeXt
15:48:11,716    Cam: 13h; RNR0Receiver Not Ready 0
15:48:11,719    Cam: 11h; RR0Receiver Ready 0
.
********************** ANALYSIS-STATISTICS **********************
                CLOSEDATE OF RECORDING:05/24/1994
                CLOSETIME OF RECORDING:10:40:25
                COUNT OF DETECTED
                    RTC-INTERRUPTS:1290
                COUNT OF SUPERNUMERARY
                    RTC-INTERRUPTS:265
************************ END OF ANALYSIS ************************
```

- Order information
  The CITS (without PC) can be ordered with Siemens part number 99 00 531. CAMWIN software is included.

Hardcopy Error Messages

The hardcopy errors, displayed on the Fluorospot H monitor, are initiated by the hardcopy cameras. The error codes are only converted in the Fluorospot to the error codes, which originally were specified for the DIGICAM Laser camera.

For error interpretation, detailed information can be obtained by means of the camera error code contained in the camera documentation of the manufacturer.

FL-H/HK display		3M laser
7	≙	13
8	≙	11
10	≙	12
11	≙	10
13	≙	20, 21
14	≙	22-28
17	≙	29-31, 37
17	≙	40-42, 79-85
19	≙	14-16
24	≙	54
31	≙	39, 56-59
35	≙	6
41	≙	96
42	≙	38, 47-53
42	≙	72, 76-78
43	≙	92-95, 98
50	≙	18
52	≙	17
53	≙	33
57	≙	1, 2, 5, 7, 9, 19, 43-46
57	≙	60-71
57	≙	87- 91, 97
69	≙	55, 73-75
69	≙	86
70	≙	99
80	≙	3
82	≙	4
86	≙	0,8

KODAK XLP			AGFA MCL-LASER		
FL-H/HK		**KODAK XLP**	**FL-H/HK**		**MCL**
00	≙	05, 29, 35, 39, 54	10	≙	30
00	≙	59, 65, 73, 74	11	≙	33
07	≙	02	18	≙	20, 41, 47, 49
08	≙	04	35	≙	05, 06, 17, 18
10	≙	01	50	≙	32
11	≙	03	52	≙	31,44
11	≙	09	57	≙	45
34	≙	25	70	≙	07
35	≙	81	83	≙	1, 08, 42, 43
50	≙	06	84	≙	02, 03, 04, 40, 46
57	≙	62, 64	86	≙	19
80	≙	55			
83	≙	31-34, 40, 53			

KONICA LI-10A

FL-H / HK	KONICA Laser
7	301B
	301C
8	3065
10	3019
	301A
11	301E
18	300A
	300B
21	4180
34	
35	510E
	5125
35	
44	4181
	4190
50	3032
69	
73	301F
	3020
	3021
	3023
	3024
	3028
	300C
	300D
	3014
	3015
	3016
	3018

FL-H / HK	KONICA Laser
75	
78	3035
	3036
	3037
	3038
80	
83	
85	2903
88	
92	303C
93	303D
96	
99	

FUJI FL-IM 3543

FLUOROSPOT H/HK	FUJI-Laser
06	01, 02, 23, 24, 52, 53
10	13
11	12
18	06, 15-21, 51, 54-61
31	11
52	51, 61
57	22,25
80	05
83	07
97	10, 14

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CPU	Central Processing Unit
CTR	Control
DEIB	Data External Interface Box
FOC	Fiber Optical Cable
HCC	Hardcopy Camera
HCI	Host Control Interface
KEIB	Keypad External Interface Box
LUT	Lookup Table
MCL	Matrix Laser Camera
MFRI	Multi Format Receiving Interface
MG	Medical Gateway
MIN	Matrix Image Network
OCL	Optical Camera Link
OEM	Original Equipment Manufacturer
PC	Personal Computer
SHPT	Siemens Host Protocol Translator
SID-BOX	Scanner interface Device Box
UKEIB	Universal External Interface Box

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All pages:		New layout.
Chap.0	Page 1:	Date, Revision level changed.
	Page 2,3,4:	Revision level table, table of contents updated.
Chap.1	Page 2:	Chap "Units without OCL" expanded.
Chap.2	Page 20/21:	Tables expanded.
	Page22,23,24	New.
Chap.3		New.
Chap.5	Page 1:	Updated.

TD AX 5 / Blum
TD AX 1 / Biedermann

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